

CRATAEGUS DESERTORUM (ROSACEAE) REDISCOVERED

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ABSTRACT

Crataegus desertorum Sargent, previously known only from historic collections, has recently been rediscovered in Bandera and Uvalde counties in Texas. Its habitat is described and it is reduced in rank to *Crataegus viridis* L. var. *desertorum* comb. nov.

KEY WORDS: *Crataegus*, Rosaceae, United States, Texas, new combination

INTRODUCTION

In 1917 and 1918, E.J. Palmer collected a spiny hawthorn of the series *Virides* in the city of Uvalde, Texas. A few years later, C.S. Sargent described it as a new species, *Crataegus desertorum* Sargent (Sargent 1922). In May of 1919, Palmer revisited the type locality and collected additional specimens, but we do not know if these have been mounted and distributed. To our knowledge, the taxon was not again seen or collected after 1919 except for the very recent collections discussed below. In later years, the species was apparently reduced in taxonomic rank to that of a form, as Vines (1960) referred to it as "*C. glabriuscula* f. *desertorum* Sargent." In view of new evidence presented here, the authors feel it is appropriate to revise the taxonomic status of *C. desertorum*.

DISCUSSION

In December 1988, Betty Anderson, John Gee, and Margaret Deely discovered some unusual trees growing on Cliff and Betty Anderson's property in Bandera County, Texas. Mr. Gee, a very capable ornithologist and botanist, recognized them as *Crataegus*. Knowing of our interest in this genus, Mr. Gee arranged for the authors to visit the Anderson property in June 1989. One of us (Enquist) was able to visit the property and found three species of hawthorn, the most common by far being the "lost" species *Crataegus desertorum*. Shortly thereafter, on 4 July 1989, one of us (Keeney, with wife Carrie Keeney) relocated the original type locality of *C. desertorum* in the city of Uvalde.

The populations in both counties are in bottomlands near significant watercourses with a probable high water table. This is not a "desert" habitat, as implied by Sargent in his original description. It is instead the type of habitat in which one might expect to find a hawthorn of series *Virides*. Some associated woody species are *Carya illinoensis* (Wang) K. Koch, *Quercus fusiformis* Small, *Q. stellata* Wang, *Celtis laevigata* Willd., *Diospyros texana* Scheele, *Aloysia gratissima* (Gill. & Hook.) Troncoso, *Juniperus ashei* Buchh., *Ilex decidua* Walt., *Bumelia lanuginosa* (Michx.) Pers., and *Rhus lanceolata* (Gray) Britt.

In his original description of *Crataegus desertorum*, Sargent made the following remarks. "In its unusually zigzag branches, numerous long slender spines and minute fruit this is perhaps the most distinct species of the *Virides* Group. The fact that it inhabits a region of rare rainfall where the soil in which it grows is only thoroughly wet two or three times in the year would be remarkable for any species of *Crataegus*; it is the more remarkable for a species of this Group, for the *Virides*, growing usually in low ground, are moisture loving plants. It is unfortunate that Mr. Palmer has been able to find only a single plant." (Sargent 1922, p. 188).

Sargent did not hesitate to describe a species from only a single plant, a practice that has not endeared him to subsequent workers. Many of Sargent's species are now thought to have been hybrids or localized variants of more common species, and have been downgraded in status to the level of varieties or forms. Others have simply been synonymized. Sargent's description of *Crataegus desertorum* was apparently based on an individual with smaller leaves and fruit than is typical of the range of variation seen in the two presently known populations. For example, Sargent described the taxon as a shrub three meters tall. Several individuals in Bandera County are small trees 6-8 meters tall. Sargent also described the fruit as 4-5 mm in diameter. We find the fruit averages 8-10 mm in diameter, much like other members of series *Virides*. One individual in the Bandera County population bears fruit averaging 6-7 mm in

diameter. This same individual also bears leaves within the size range given by Sargent.

Like many of Sargent's *Crataegus* species, *C. desertorum* has been reduced in rank by subsequent workers. In this case, however, we feel it has been placed within the wrong species. In his remarks on the *Crataegus* problem, Vines (1960, p. 329) stated that he sought the advice of E.J. Palmer, who "graciously provided the author with a list of those southwestern species which he considers to be valid and also has contributed a key to both the series and species." Vines used these lists as a "basis of approach" supplementing his own investigations and conclusions after five years of study. It is in this publication that we find *C. desertorum* referred to as "*C. glabriuscula* f. *desertorum* Sargent." Although it is possible Sargent himself may have reduced *C. desertorum* to the rank of a form, the present authors have not been able to find any publication in which Sargent did so. If it were Vines' intention to himself adjust the rank of the taxon, it cannot be considered legitimate, because he did not cite the basionym or place of publication.

Crataegus glabriuscula (Sargent 1901) was described from the area of Dallas, Dallas County, Texas. How was *C. desertorum*, from southwest Texas, connected to *C. glabriuscula*, 320 miles away in northeast Texas? All the sheets associated with Sargent's original description are cited as being from Uvalde County, Texas. However, one of these sheets (*Palmer 13699*) is actually from Baird in Callahan County, which is about 160 miles west and slightly south of Dallas County. Close inspection of this sheet reveals that it is misidentified. It is a local variant of *C. crus-galli* L., which is in series *Crus-galli*. This was confirmed by collections made in Callahan County of a very similar plant (29 April 1990, *Enquist 1739* [GH, MO, SMU, UVST, TAES, TEX]) which had ten pink anthers, not the twenty pale yellow anthers of *C. desertorum*.

There are numerous sheets in the collection of the Gray Herbarium which are identified as *Crataegus glabriuscula*. Some approach the Uvalde area as closely as San Saba County. They apparently were the basis of the link between *C. desertorum* and *C. glabriuscula*. We believe these specimens are part of a continuum of variation and see no reason to consider them anything more than variants of another species, the widespread and highly polymorphic *C. viridis* L. Study of the type material of *C. glabriuscula* indicates that it is not distinct from *C. viridis* (Enquist, in prep.).

The only truly distinctive character of *Crataegus desertorum*, as a member of series *Virides*, is its possession of numerous long and slender spines. Its zigzag branching is common to most hawthorns having a spine at every stem node. Although members of series *Virides* normally have few spines or none, there are scattered individuals found in Texas that are spiny. One such plant (U.S.A. Texas: Caldwell County, near Lockhart State Park, 19 July 1989, *Enquist 1455* [GH, MO, SMU, UVST, TAES, TEX]) is very similar to *C. desertorum* but apparently is moderately introgressed with the surrounding

population of another morphotype of *C. viridis*. Several other examples of *C. viridis* with slender spines have been seen in DeWitt, Burleson, and Dallas counties but are not detailed here. We only wish to make the point that such spines, though not common, sometimes occur in *C. viridis*. However, none of these examples produce the quantity of spines seen in *C. desertorum*.

As is the case with so many other hawthorns, the most appropriate taxonomic rank of *Crataegus desertorum* is arguable. The plants of *C. desertorum* from Uvalde and Bandera counties are apparently disjunct from the remainder of *C. viridis* and morphologically distinct from it in their consistent production of numerous spines. However, because spines are encountered in *C. viridis*, and because we can find no other consistent morphological character to separate the two taxa, we feel that *C. desertorum* is best considered a localized variant of *C. viridis* as formally designated below.

Crataegus viridis L. var. *desertorum* (Sarg.) Keeney & Enquist, *stat. et comb. nov.* (Figure 1). BASIONYM: *Crataegus desertorum* Sarg., J. Arnold Arb. 3:187-188. 1922. HOLOTYPE: U.S.A. Texas: Uvalde County, Uvalde, 17 June 1917, *E.J. Palmer 12279* (GH!; Isotype: GH!).

The holotype bears the word "Type" written in script (presumably by Sargent), but the sheet is numbered 12279 rather than 12379 as cited in the original protologue, and as noted in the annotation by David Boufford. The duplicate bears no annotation by Sargent.

Additional specimens examined: U.S.A. Texas: Bandera County, Anderson property, headwaters of West Sabinal River, 17 June 1989, *Enquist, Anderson, & Gee 1357, 1329, 1345* (GH, MO, SMU, UVST, TAES, TEX); Bandera County, Anderson property, headwaters of West Sabinal River, 12 April 1990, *Enquist 1690* (GH, MO, SMU, UVST, TAES, TEX). Uvalde County, Uvalde, rocky bed of creek, 22 March 1917, *E.J. Palmer 11348* (GH); Uvalde County, Uvalde, bed of rocky creek, 12 October 1917, *E.J. Palmer 12973* (GH); Uvalde County, Uvalde, rocky bed of creek, 6 April 1918, *E.J. Palmer 13322* (GH); Uvalde County, Uvalde, rocky bed of creek, 5 May 1918, *E.J. Palmer 13498* (GH); Uvalde County, Uvalde, bed of rocky branch, 24 September 1918, *E.J. Palmer 14496* (GH); Uvalde County, Uvalde, 4 July 1989, *Keeney & Keeney 9027, 9033* (UVST, SMU); Uvalde County, Uvalde, 5 July 1989, *Enquist & Keeney 1450* (GH, MO, SMU, UVST, TAES, TEX).

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Figure 1. Type specimen of *Crataegus desertorum* (GH).

Anderson for their gracious cooperation and for allowing us access to their property.

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